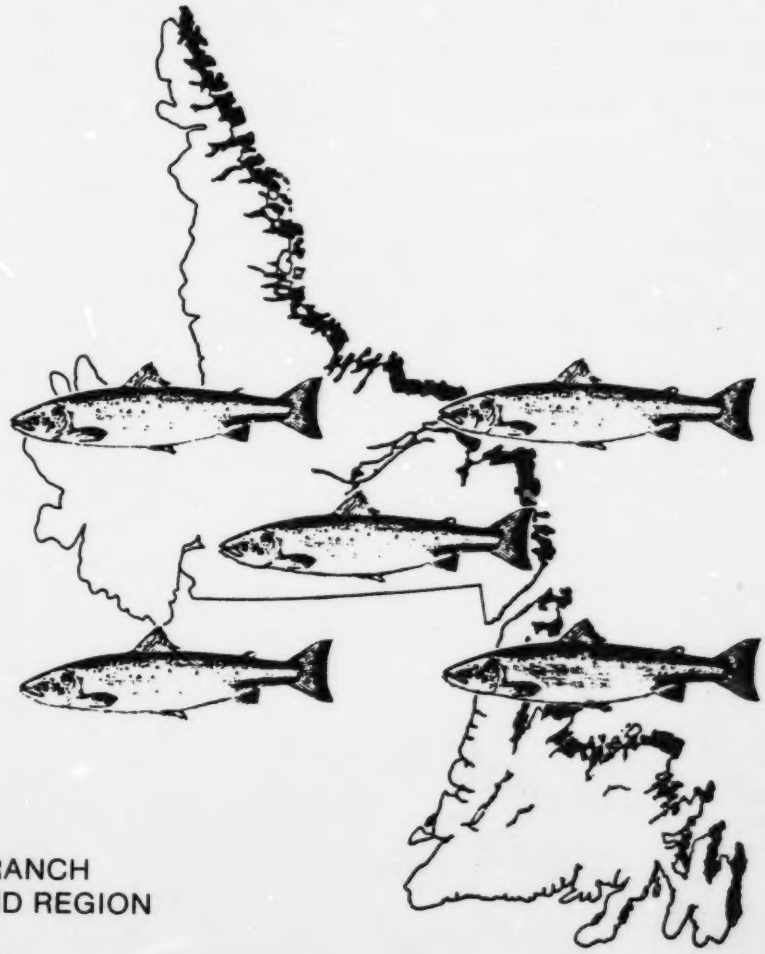
Fisheries and Oceans | Pêches et Océans

THE ECONOMIC IMPACT OF THE NEWFOUNDLAND AND LABRADOR COMMERCIAL SALMON FISHERY: AN INTRA-REGIONAL STUDY OF DEPENDENCE

— 1983 —



ECONOMICS BRANCH
NEWFOUNDLAND REGION

SEPTEMBER, 1985

Canada

THE ECONOMIC IMPACT OF THE NEWFOUNDLAND AND LABRADOR COMMERCIAL SALMON FISHERY: AN INTRA-REGIONAL STUDY OF DEPENDENCE

- 1983 -

M.C. Grandy
Economics Branch
Department of Fisheries & Oceans
Newfoundland Region

September, 1985

TABLE OF CONTENTS

		PAGE
	LIST OF TABLES	ii
	LIST OF FIGURES	iii
	ACKNOWLEDGEMENTS	iv
	INTRODUCTION	1
	Purpose of the Study	2
	Limitations of the Study	2
	Structure of the Study	4
SECTION I	HISTORICAL BACKGROUND	5
	- Analytical Considerations	8
	- Recreational Salmon Fishery	14
	- Summary	17
SECTION II	ECONOMIC IMPACT OF THE COMMERCIAL SALMON FISHERY BY STATISTICAL AREA	18
	- Statistical Area Profiles	20
	- Area A	25
	- Area B	26
	- Area C	27
	- Area D	28
	- Area E	29
	- Area F	30
	- Area G	31
	- Area H	32
	- Area I	33
	- Area J	34
	- Area K	35
	- Area L	36
	- Area M	37
	- Area N	38
	- Area O	39
SECTION III	CONCLUSIONS AND RECOMMENDATIONS	40
	- Conclusions	41
	- Recommendations	45
	APPENDIX	47

LIST OF TABLES

		PAGE
TABLE I	Newfoundland and Labrador Commercial Salmon Landings, 1910 - 1983	48
TABLE II	Number of Licenced Commercial Salmon Fishermen - Newfoundland and Labrador, 1960 - 1983	49
TABLE III	Units of Licenced Fishing Gear Available to the Salmon Fishery, Newfoundland and Labrador, 1959-1983	50
TABLE IV	Maritimes and Quebec Commercial Salmon Landings, 1910-1983	51
TABLE V	Commercial Atlantic Salmon Landings and Value, 1952-1983	52
TABLE VI	Newfoundland and Labrador Commercial Salmon Landings As A Percentage of Total Atlantic Canada Commercial Salmon Landings, (By Weight) 1952-1983	53
TABLE VII	Average Landed Value of Commercial Salmon 1952-1983	54
TABLE VIII	Average Landed Value of Commercial Salmon by Statistical Area, Newfoundland and Labrador, 1968-1983	55
TABLE IX	Local Sales As A Percentage of Total Commercial Salmon Landings (By Weight), Newfoundland and Labrador, 1973-1983	56
TABLE X	Atlantic Salmon Recreational Catch and Effort, 1953-1983	57
TABLE XI	Recreational Salmon Catch (Numbers of Fish), 1970-1983	58
TABLE XII	Newfoundland & Labrador Recreational Salmon Catch As A Percentage Of Total Atlantic Canada Recreational Salmon Catch, 1953-1983	59
TABLE XIII	Recreational Salmon Catch, Effort, and Catch-per-Unit Effort, 1970-1983	60
TABLE XIV	Area Ranking By Annual Revenue Quotient, Newfoundland and Labrador, 1981-1983	61
TABLE XV	Area Ranking By Employment Quotient, Newfoundland and Labrador, 1983	62

LIST OF FIGURES

		PAGE
FIGURE 1	Canadian Atlantic Salmon Commercial Landings, 1910 - 1983	63
FIGURE 2	Canadian Atlantic Salmon Commercial Landings, 1953 - 1983	64
FIGURE 3	Landings and Landed Value Per Salmon Fisherman, Newfoundland and Labrador, 1960 - 1983	65
FIGURE 4	Recreational Salmon Catch and Effort, Newfoundland and Labrador, 1970 - 1983	66
FIGURE 5	Recreational Salmon Catch and Effort, Maritimes and Quebec, 1970 - 1982	67
FIGURE 6	Fisheries Statistical Boundaries and Northwest Atlantic Fisheries Organization (NAFO) Boundaries	68

ACKNOWLEDGEMENTS

I am particularly grateful to the authors of the 1978 paper of similar title, Jim Jones, Gerry Dawe and Clar Fisher. This paper draws heavily on their work, and is in fact an update of their paper. Rex Porter of Fisheries Research Branch was very helpful in sorting and correcting the data available. Thanks go to Derek Tobin for his assistance in compiling data, and thank-you to Marilyn Bugge, Helen Flynn and Judy Driscoll for the typing of the study.

M.G.

INTRODUCTION

INTRODUCTION

PURPOSE OF THE STUDY

This study is an update and refinement of a previous work completed in 1978[1], which was part of the Newfoundland Region Economics Branch submission to the Socio-Economic Subcommittee of the 1978 Atlantic Salmon Task Force Review.

The emphasis of this study, as with the previous study, is to provide social and economic information on the commercial Atlantic salmon fishery in Newfoundland and Labrador and give an indication of the potential social and economic implications stemming from various management alternatives. However, unlike the 1978 paper, this paper concentrates on the fishing revenues of vessels less than 35 feet in length, which constitute the overwhelming majority of the salmon fishing fleet.

LIMITATIONS OF THE STUDY

This study cannot, however, generate enough information to explain accurately all social and economic aspects of the commercial salmon fishery. The study is limited by time and data constraints which retard the scope of the analysis, and hence its conclusions. Data problems occur because salmon landings data are not collected on an individual basis for salmon fishermen using inshore vessels (less than 35 feet in length). Since practically all salmon landings are made by inshore vessels, this

---

1 Jones, J.B. et al, The Economic Impact of the Newfoundland and Labrador Commercial Salmon Fishery - An Intra-Regional Study of Community Dependence, Economic Services Branch, Department of Fisheries and Oceans, Newfoundland Region, July, 1978.

precludes any individual analysis. In addition, time and budget constraints do not permit the gathering of extensive original data. The best available data is an aggregate total of community landings which is provided by the Statistics and Systems Branch. Consequently, the paper is restricted to giving the economic impact rather than an economic analysis of the salmon fishery.

This study emphasizes to the commercial aspect of the salmon fishery in Newfoundland and Labrador. For this reason, recommendations regarding the overall distribution of the Atlantic salmon resource among various user groups are not made. Further, conclusions are drawn from, and recommendations confined to, intra-regional considerations only.

The study determines the impact or dependency of an area or community upon salmon revenues and this impact or dependency can then be used to help determine the overall social and economic effect of management decisions. The actual effects of management decisions such as reduced effort or salmon enhancement cannot be determined until the actual extent of this reduction or enhancement becomes known. In addition, this study will contribute to, rather than dictate, the economic rationale for any management program.

In spite of the above limitations, however, the study does attempt to quantify, to some degree, the social and economic impact of the salmon fishery upon areas and communities in

Newfoundland and Labrador. This alone can provide considerable insight into, and influence upon, future management decisions regarding the commercial salmon fishery in Newfoundland and Labrador.

STRUCTURE OF THE STUDY

The paper is presented in three sections. The first section examines the historical background of the commercial salmon fishery - the recorded landings and values, numbers of fishermen, and amounts of licenced fishing gear available to the fishery over the past few decades. The recreational catch statistics for Newfoundland and Labrador are also included in this section. These data are analysed to determine whether or not any noticeable trends have developed in the fishery. The recorded landings for the Maritimes and Quebec are also included for comparative purposes.

The second section examines the current impact of the salmon fishery upon the Fisheries Statistical Areas of Newfoundland and Labrador (Figure 6, p.68). As noted previously, the salmon fishery is looked at in relation to the inshore fishery since practically all salmon fishermen operate in vessels less than 35 feet in length.[1] The third section presents the conclusions and makes some basic recommendations.

---

1 The Socio-Economic Importance of the Commercial Salmon Fishery in Newfoundland and Labrador. A Report Prepared for the 1984 Atlantic Salmon Task Group by Economics Branch, Department of Fisheries and Oceans, Newfoundland Region, October, 1984.

SECTION I

HISTORICAL BACKGROUND

HISTORICAL BACKGROUND

The Atlantic salmon has been pursued both commercially and recreationally in Newfoundland and Labrador for centuries. The commercial fishery progressed over the years from the rivers and streams to the river estuaries and eventually to the ocean. The commercial fishery of today is carried out by inshore fishermen who use the revenues mainly to augment their traditional revenue source - the cod. The demand for recreational fishing in Newfoundland and Labrador has grown in recent years with improved transportation networks and increased incomes. In addition, future increases in leisure time are expected to increase demand even further.

This section will review the historical development of both the recreational and commercial salmon fishery in Newfoundland and Labrador and, hopefully, provide some insight into the problems confronting the Atlantic salmon fishery today.

Since 1910, the Newfoundland and Labrador commercial salmon catch has displayed a long range fluctuation - peaking in 1930 and reaching a 60-year low in 1956 (Table I, p.48 and Figure 1, p. 63). The 1930 catch was over 3,000 tonnes while in 1956 it was less than 750 tonnes. Although the decline between 1930 and 1956 is very pronounced, there were flucuations up and down from year to year. Similar fluctuations are also noticeable between 1910 and 1930.

Looking at the recent past, from 1956 to 1980, there was a noticeable upward trend in total salmon catches in Newfoundland and Labrador. Figure 2, p. 64 illustrates trends in salmon landings over the past 30 years. Similar to the 1930-56 decline, the upward trend following 1956 displayed short-term fluctuations including an abrupt drop in 1978-1979. The 1980 catch of 2,103 tonnes was the highest recorded in Newfoundland and Labrador since 1940, although the catches in 1973-1977 were close to this level. Since then, catches have declined to 1,029 tonnes in 1983. Figure 2 also highlights the effect on Maritimes and Quebec landings of the decrease in numbers of licenced salmon fishermen there. Up to 1969, the mainland trend mirrored the Newfoundland and Labrador trend.

Figure 3 (p. 65) illustrates the average commercial salmon landings and landed value per licenced fisherman from 1960 to 1983. (Table II, p. 49 gives the number of licenced salmon fishermen from 1960 to 1983). Average catches show a marked upward trend until 1973 and a downward trend since then (1980 and 1981 being exceptions). It should be noted that from 1972 to 1980, there was a ban on commercial salmon fishing in Quebec and New Brunswick, and the Port-aux-Basques drift net fishery was closed permanently in 1972. In addition, limited entry licencing regulations were enacted to eliminate the marginal fishermen from the fishery. However, to draw any concrete conclusions from the catch-per-fisherman data may be erroneous because the number of licenced fishermen would not accurately reflect the intensity of fishing effort, unless, of course, licenced fishermen were

considered homogeneous with respect to fishing effort. The best proxy of fishing effort is the total amount of fishing gear utilized in the fishery. As this information is not readily available, the amount of gear available to the fishery could be considered the next best alternative. Salmon fishing gear is defined in 50 fathom units of netting. These units were reported as being available to the fishery by fishermen when applying for licences. As with the number of licenced fishermen, the total amount of fishing gear available does not indicate the intensity with which that gear was fished. However, if it is assumed that the utilization rate (the intensity with which the gear was fished) remains constant from year to year, then the relative values of catch-per-fishing unit remains unaffected, even though the absolute levels of catch-per-fishing unit values will be slightly underestimated. (This assumption may not be valid as there is some evidence that fishermen tend to use more gear when catch rates are good).[1] In 1983, new regulations were implemented which limit the amount of salmon gear a fisherman can use to 200 fathoms for full-timers and 100 fathoms for part-timers. Table III (p. 50) gives the total units of salmon fishing gear available to the fishery from 1959 to 1983.

ANALYTICAL CONSIDERATIONS

Using the above data, a number of simple linear regressions were run to try to determine the relationship between total catch and available fishing gear. Four regression equations were

1 R. Porter, Fisheries Research Branch, Department of Fisheries and Oceans, personal communication.

constructed using the least squares method, with total salmon catch as the dependent variable and available fishing gear as the independent variable. The first run used data on available gear for the entire period from 1959-83; the second from 1959-71; the thirdfrom 1972-83; and the fourth from 1972-80. The last three runs were designed to provide a comparative analysis of catches and effort prior to the ban, the 12 years since the ban was introduced, and during the period when the ban was in effect.

The regression equation for the 1959-1983 period is as follows:

Equation I: $TC = 411.79 + 0.0599\ G$

$R = 0.5924,\ R^2 = 0.3509,\ t = 3.526$

where:
TC = total salmon catch
G = available gear
R = correlation coefficient
R^2 = coefficient of determination
t = t-statistic for correlation coefficient

The intercept in Equation I is expressed in thousands of kilograms. The slope of the regression line is 0.0599. A correlation coefficient of 0.5924 indicates a direct relationship between available gear and total catch. The coefficient of determination says that 35.09% of the variation in total catch is explained by the available gear. The t-statistic shows that the independent variable (available gear) is very significant in the determination of the total catch.

The slope of Equation I implies that for each unit (50 fathoms) increase in available fishing gear, total catch is estimated to increase by 0.0599 units of catch. A unit of catch is defined as 1,000 kilograms (1 tonne). Thus, during the period 1959 to 1983, an extra unit of fishing gear would increase total salmon catch by an estimated 59.9 kilograms.

The second and third regression equations were designed to provide a comparison between the entire period from 1959 to 1983 and the first and last half of the period.

Using data between 1959 and 1971, the regression line is as follows:

Equation II: $TC = -32.77 + 0.0884\ G$

$R = 0.8543,\ R^2 = 0.7298,\ t = 5.451$

The negative intercept in Equation II may be reflective of the low catches from 1959 to 1962. The slope indicates that for the 13-year period, an extra unit of available gear would increase total salmon catch by an estimated 88.4 kilograms. The correlation coefficient shows a very strong direct relationship between landings and available gear. The t-statistic also indicates that the available gear variable is statistically significant.

The third regression line, using data between 1972 and 1983 is as follows:

Equation III: $TC = 1049.32 + 0.0296\ G$

$R = 0.2114,\ R2 = 0.0447,\ t = 0.684$

Unlike the two previous equations, the correlation between available gear and salmon landings is not strong. The t-statistic indicates that for this set of data, available gear is not significant in determining the total catch. Therefore other factors may be more important in the determination of catch. In addition, the data indicate that an increase in available gear will increase catches only marginally. An extra unit of available fishing gear would increase total catch by 29.6 kilograms. This is one-third the productivity of the 1959 - 1971 period and one-half the productivity of the 1959-1983 period.

The fourth regression which encompasses only the ban period (1972-80) is as follows:

Equation IV: $TC = 1387.65 + 0.0167\ G$

$R = 0.1378,\ R^2 = 0.0190,\ t = 0.368$

Again, the low correlation coefficient is indicative of a very weak relationship. The slope of Equation IV implies that an extra unit of available gear will only increase total catch by an estimated 16.7 kilograms. The regression period covers the years in which available gear was at its peak, and the resulting productivity level is a marked decrease from the 1959 to 1972 period. Again, the t-statistic indicates that for the time period covered, available gear is not significant in determining total catch.

It appears evident that the long-term trend is towards a decline in the marginal productivity of the salmon fishery. However, it should be noted that annual natural fluctuations in populations over short time periods (5-10 years) might tend to be exemplified as either high or low marginal products. Also, as the regressions show, although a strong correlation between available gear and total catch can be shown over long periods, for short periods, no such correlation is established.

While the marginal product is still positive over the long term (indicating the fishery has not reached its maximum sustainable yield), it is approaching zero. In fact, 1983 data indicates a decline in catch occurred despite an increase in available gear. Thus, the maximum sustainable yield may be surpassed already, and marginal productivity may be negative. However, this is not a reliable conclusion based on a one-year observation.

This paper does not address the question of whether the economic optimal level of fishing effort is met or exceeded. This can only be determined through analysis of the costs and revenues of the fishery. However, the economic optimal level of effort is typically reached before the maximum sustainable yield. The optimal economic yield occurs at that point on the yield curve where the difference between the value of the catch and the cost of catching is maximized.

Because the marginal productivity is approaching zero, i.e. approaching the maximum sustainable yield, then it is likely that the economic optimum has been met or surpassed, in which case, any potential economic rent in the fishery is being dissipated.

For purposes of comparison, Tables IV and V (pp. 51, 52) give the commercial salmon landings (1910-1983) and value (1952-83) for the rest of the Atlantic Region (the Maritimes and Quebec). Landings since the 1972 ban have not returned to their pre-ban levels, mostly due to the decreased commercial effort in the Maritimes and Quebec. Up to 1968, Newfoundland and Labrador had about 60% of the commercial landings (by weight) of Atlantic salmon. Since that time, especially during the ban period, this proportion has increased to about 90% (Table VI, p. 53).

However, the revenue structures of the two areas are quite different. Historically, the average landed value per kilogram in Newfoundland and Labrador has been less than 60% of the Maritimes and Quebec values (Table VII, p. 54). The difference in landed values is due to the larger markets and better transportation networks existing in the Maritimes and Quebec. Similarly, a price differential is noticeable within Newfoundland and Labrador (Table VIII, p. 55). Salmon prices are historically highest in Statistical Area E (Conception Bay) which has a large local market, and which markets almost 90% of commercial landings locally (Table IX, p. 56). In addition, Areas A and O which have the poorest transportation networks and small local markets also

have, historically, the lowest prices and the lowest percentage local sales.

In 1972, in conjunction with the ban, limited entry regulations were brought into effect. The purpose of limited entry was to raise the average incomes of bona fide salmon fishermen by eliminating the marginal fishermen and preventing the entry of additional fishermen. The regulations were relaxed in 1975, but have since been tightened. If Figure 3 (p. 65) is an accurate reflection of salmon incomes, the policy worked, although a portion of the increase can be attributed to price increases. The presence of marginal fishermen who contributed very little to total catch (and hence total revenue) artificially (arithmetically) reduced the average incomes of salmon fishermen and thus diminished the apparent importance of the salmon fishery to the incomes of inshore fishermen. New entrants would have spread the existing catch over a greater number of fishermen, thereby creating very real reductions in incomes.

The commercial salmon fishery has averaged $4.2 million annually since 1973. The revenues from the salmon fishery cannot, however, be looked at in isolation and must be considered in relation to the total fishing income of inshore fishermen. This is shown in Section II (p. 18).

RECREATIONAL SALMON FISHERY

The effort expended in the recreational salmon fishery of Newfoundland and Labrador has increased by about two-thirds since

the early 1970's (Table X, p. 57 and Figure 4, p. 66) due to increased demand resulting from improved transportation networks, higher incomes, and more leisure time. The number of rod days fished has gone from 80,000 in 1971 to 133,000 in 1983. At the same time, the total landings show a slow upward trend. It appears that the resource is capable of supporting the increased fishing pressure. However, there have been localized areas, such as Statistical Area K, where rivers have experienced severe declines in salmon runs and hence, sport fishing seasons have been shortened (in some cases rivers have been closed altogether).

Unlike the commercial fishery, the sport fishery does not reveal any significant downward trend in the marginal product of fishing effort over the long term. Between 1959 and 1971, the marginal product was 0.56 kilograms per rod day. (This was determined, in the same manner as above, by a simple linear regression). During the commercial ban, 1972 to 1980, the marginal product was 0.69 kilograms; that is, an extra rod day fishing would add an estimated 0.69 kilograms to the total sports fishing catch. However, a regression of the 1959-1983 data shows a marginal product of 0.41 kilograms, or only 0.15 kilograms less than the pre-ban period (1959-71). Although this is a decrease, it is not a marked downward trend. The marginal product derived from a regression of the 1972 to 1983 data is 0.52 kilograms per rod day - almost unchanged from the previous 13 years. In all cases, the t-statistic shows a significant relationship between rod days and total catch.

The recreational fishery in Newfoundland and Labrador is not dominant over the total Atlantic recreational fishery as the Newfoundland commercial fishery is over the Atlantic commercial fishery (Table XI, p. 58). It does, however, form a significant portion (Table XII, p. 59) representing approximately one-third by weight and one-half by number of the total recreational catch in the Atlantic provinces. Catches throughout Atlantic Canada have generally remained stable. However, in the Maritimes and Quebec, effort (rod days) has increased by an incredible 133% from 1971 to 1982 - a time when the resource was widely claimed to be in decline, and restrictions were being applied to the commercial fishery (Table XIII, p. 60 and Figure 5, p. 67). In contrast, recreational fishing effort in Newfoundland and Labrador increased by only 68% in the same period.

The monetary value of the recreational fishery is different from and more difficult to quantify than that of the commercial fishery. The contribution of the recreational fishery to the Canadian or Newfoundland economy has proven difficult to measure, although a number of methods such as gross expenditures and consumer's surplus have been attempted. The basic difference between the two fisheries is that the commercial fishery is a productive process whereas the recreational fishery is a consumptive process. While non-productivity in the commercial fishery reduces, to some extent, gross national product (fishermen may not be as productive elsewhere), non-productivity in the recreational fishery may not reduce it. This is because

there are many substitutes for sport salmon fishing as a recreational activity.

SUMMARY

Regardless of the inadequacies of economic data, there is obviously a downward trend in the marginal product of the commercial salmon fishery in Newfoundland and Labrador. This downward trend, if continued, cannot help but have an undesirable effect upon the economic structures of the coastal communities of Newfoundland and Labrador. There are two feasible alternatives available: (1) restrict effort to ensure that total catch does not exceed the maximum sustainable yield; (2) enhance the resource such that either incomes can be raised or employment sustained (or a combination of both). The next section tries to ascertain the present impact of the salmon fishery upon various areas and communities of Newfoundland and Labrador that can aid in the determination of the effects of both these alternatives.

SECTION II

ECONOMIC IMPACT OF THE COMMERCIAL SALMON FISHERY BY STATISTICAL AREA

ECONOMIC IMPACT OF THE COMMERCIAL SALMON FISHERY BY STATISTICAL AREA

This section examines the present day impact of the salmon fishery upon the total income from the inshore fishery (vessels < 35') in the various Newfoundland Fisheries Statistical Areas (Fig. 6, p. 68). The salmon fishery will be examined from a revenue structure and community dependence viewpoint.

The following analysis is on an area and community basis for specific reasons. It would be misleading to simply consider the province as a whole since the economic structures of coastal outports are known to be much weaker than that of urban areas. The relative diversification of the urban areas would overshadow the limited employment opportunities that exist in the coastal areas, thereby distorting the economic effect of the inshore fishery as a whole and the salmon fishery in particular upon the coastal economy. In addition, the differences that exist among regions within the fishery would be lost in the aggregate data. In particular, differences in the length of the fishing season and the size of the inshore catch relative to the salmon catch would be significant in determining employment shifts within the inshore fishery. For example, in the absence of regional analysis, in an area such as Labrador where salmon revenues are a major part of total inshore fishery revenues,[1] the salmon fishery

---

1 The Socio-Economic Importance of the Commercial Salmon Fishery in Newfoundland and Labrador. A Report Prepared for the 1984 Atlantic Salmon Task Group by Economics Branch, Department of Fisheries and Oceans, Newfoundland Region, October, 1984.

would not be credited with the important role that it does indeed have with respect to the economic viability of this coastal region. Substantial dependence upon the salmon fishery makes Labrador fishermen especially vulnerable to economic difficulties. If, for example, the salmon fishery in Labrador was closed, it would be very difficult for the other sectors of the inshore fishery in the area to absorb the extra effort and still provide the same level of incomes. In addition, neither the technology nor the resource base to replace lost income exists in this area. Thus, to ensure that the rural andregional role of the salmon fishery is clearly illustrated and to minimize the possibility of erroneous judgements, this analysis is conducted on the basis of the Newfoundland Fisheries Statistical Areas.

STATISTICAL AREA PROFILES

For each Fisheries Statistical Area, a profile divided into four parts has been constructed. Part A encompasses the demographic characteristics of the area. Included in Part A are the geographic extremities of the area, the population (based on the 1981 census), the total labour force of the area, the male labour force (which makes up the vast majority of the fishing labour force), total licenced fishermen, licenced inshore/ nearshore fishermen (vessels $<$ 65') and licenced salmon fishermen. The breakdown of the labour force in the area is designed to provide insight into the relative importance of

employment in the salmon fishery and the fishery in general. The portion of total labour force involved in fishing is an indication of the availability of alternative employment within the area. For example, if 80% of an area's total labour force is involved in fishing, then it can be assumed that there is very limited alternative employment available within the area. Labour force data on fishing is given for 1983. The data on the statistical area's total labour force for 1983 is not available, so the 1981 census data is used. It is assumed that there have been no dramatic changes in the labour force from 1981 to 1983.

Part B gives the landings and values for the inshore fishery (vessels <35') and the salmon fishery for 1981, 1982 and 1983. The inshore fishery is used because the salmon fishery is almost exclusively prosecuted in small vessels. Of the 5,063 licenced salmon fishermen in 1983, 91% were in the inshore fisheries sector, as compared to only 9% in the nearshore sector (vessels 35'-64'). Based on information collected by the Economics Branch, Newfoundland Region, an average of 73% of licenced inshore salmon fishermen actually sold salmon during the years 1981 to 1983. These 73% are estimated to have caught about 93% of all salmon sold. Because the salmon fishery is obviously an inshore fishery, it is thought to be more relevant to compare salmon revenue to total inshore revenue. From these statistics, revenue quotients are determined. A revenue quotient is the numerical equivalent of a fraction whose numerator is revenues in

the salmon fishery in a statistical area relative to revenues in the inshore fishery in that statistical area; the denominator is revenues in the salmon fishery for the entire province relative to revenues in the inshore fishery for the entire province. This revenue quotient indicates the significance of salmon revenues in the statistical area vis-a-vis the province as a whole. In addition, this section includes a revenue quotient based on a three-year average (1981, 1982, 1983). The three-year average is designed to avoid the influence of an extraordinary year (either high or low salmon catches) on any one area. Further, an employment quotient is included which indicates the concentration of salmon fishermen in the statistical area vis-a-vis the province as a whole. This quotient is estimated in a manner similar to the revenue quotient (Tables XIV, XV, pp. 61, 62).

The quotients have their main use in permitting the ranking of statistical areas according to the significance of revenues and employment in the salmon fishery to each area. The area ranking is included adjacent to each quotient (the rankings are in decending order of importance from 1 to 15). This can be a very useful tool in arriving at both the long- and short-term management decisions mentioned earlier. For the long-term, if the objective of salmon enhancement is to increase social welfare, then the revenue quotient can aid in determining areas where enhancement can be concentrated. For example, if it is assumed that through an enhancement program of obstruction removal or other remedial work on streams, the total value of

salmon landings in three different areas could be increased (assuming a constant salmon price) by the following amounts: Area 1 - $10,000; Area 2 - $30,000; Area 3 - $100,000; the revenue quotient can be used to determine the distributional impact of these increases upon each of the areas. Assume that the appropriate revenue quotient for each of the three areas is: Area 1 - 3.2; Area 2 - 0.6; Area 3 - 1.2. The adjusted benefits are now: Area 1 - 3.2 X $10,000 = $32,000; Area 2 - 0.6 X $30,000 = $18,000; Area 3 - 1.2 X $100,000 = $120,000. Now net benefits can be determined by subtracting from the adjusted benefits the real enhancement costs in each area. Application of appropriate cost-benefit selection criteria will then enable areas to be ranked according to where the greatest welfare gain can be achieved through salmon enhancement. If the revenue quotient is used in the above sense, then an accurate appraisal and ranking of beneficial projects under a salmon enhancement program could be made. To simply look at nominal monetary values when considering areas for possible enhancement would omit considerations of real dependencies on salmon.

For short-term decisions, the quotients could provide information on the impact of partially or fully closing an area to commercial salmon fishing by showing the degree to which the area and communities depend upon the salmon fishery. In addition, it gives immediate information on alternate employment available to salmon fishermen within the inshore fishery. An area that has a large inshore fishery (and revenue quotient less than 1) would allow greater movement from salmon to the other

species within the inshore sector than would an area where the total inshore fishery is very limited.

Part C of the area profile gives an indication of the variance of community dependence on the salmon fishery. There are many small communities along the coast of Newfoundland and Labrador that may have a high dependence on salmon revenues even though the statistical area as a whole does not. Thus, before any regulatory changes affecting the area are contemplated, an examination of the dependent communities should be made. There is, however, a danger in accepting the community dependence figures too literally. A community may show that 100% of its inshore fish revenues are derived from salmon, yet its dependency upon salmon may be very limited. Fishermen from the community in question may be landing other inshore catches at an adjacent community where they would appear as landings in that community, thus over-emphasizing the importance of salmon revenues on their home community.

Part D gives the two marketing methods available to salmon fishermen in Newfoundland and Labrador. The marketing methods determine the variance in prices between areas. An area such as Conception Bay (Area E) which has a large local market has a very high percentage of local (non-plant) sales and almost invariably receives the highest price.

The area profiles are necessary, though not sufficient, data on which to base decisions. Before efficienct management decisions can be made, there is need as was indicated earlier, for further studies to identify the cost and earnings structure of salmon enterprises in the various areas.

AREA PROFILE - AREA A

PART A - DEMOGRAPHICS

Geographic Location: Cape Norman to Cape St. John

Population (1981): 21,330

Labour Force (1981): Male: 5,275 Total: 8,250

Licenced Fishermen (1983): 3,143

Inshore/Nearshore Fishermen (Vessels <65', 1983): 3,143

Salmon Fishermen (1983): 614

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	11037	19608	12351	351	191	196	3	1	2
$:	4407	6601	4892	1071	595	612	24	9	13

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	572	311	319
$:	1745	969	989

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
2.01	1.17	2.05	1.74	2	3	2	2

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
0.98	7

PART C - COMMUNITY STRUCTURES

NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:

YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 35% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	43	19	16	2
1982	43	16	7	6
1983	42	21	13	4
Avg.	42.7	18.66	12	4

PART D - MARKETING METHODS - 1983

Local Sales: 18,685 kg.
Commercial Buyers: 176,870 kg.

AREA PROFILE - AREA B

PART A - DEMOGRAPHICS

Geographic Location: Cape St. John to Cape Freels

Population (1981): 53,266

Labour Force (1981): Male: 12,270 Total: 17,415

Licenced Fishermen (1983): 5,663

Inshore/Nearshore Fishermen (Vessels <65', 1983): 5,663

Salmon Fishermen (1983): 1,033

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	18431	25058	22675	215	166	130	1	1	1
$:	8509	10572	10817	812	633	520	10	6	5

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	208	161	126
$:	786	613	503

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.79	0.78	0.79	0.79	5	5	6	4

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
0.91	8

PART C - COMMUNITY STRUCTURES

YEAR	COMMUNITIES WITH SALMON LANDINGS	NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS: A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 25% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	116	58	23	8
1982	116	75	18	4
1983	114	80	50	7
Avg.	115.3	71	30.3	6.4

PART D - MARKETING METHODS - 1983

Local Sales: 57,829 kg.
Commercial Buyers: 72,437 kg.

AREA PROFILE - AREA C

PART A - DEMOGRAPHICS

Geographic Location: Cape Freels to Cape Bonavista

Population (1981): 28,111

Labour Force (1981): Male: 6,530 Total: 9,425

Licenced Fishermen (1983): 2,397

Inshore/Nearshore Fishermen (Vessels <65', 1983): 2,397

Salmon Fishermen (1983): 479

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	10280	9989	9063	93	60	58	1	1	1
$:	4091	4025	4147	329	222	225	8	6	5

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	194	125	122
$:	687	463	470

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.66	0.72	0.89	0.76	6	8	5	6

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
1.00	6

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 20% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	61	32	11	1
1982	61	36	7	8
1983	63	50	27	4
Avg.	61.6	39.33	15	4.3

PART D - MARKETING METHODS - 1983

Local Sales: 18,539 kg.
Commercial Buyers: 39,662 kg.

AREA PROFILE - AREA D

PART A - DEMOGRAPHICS

Geographic Location: Cape Bonavista to Grate's Point

Population (1981): 29,085

Labour Force (1981): Male: 6,845 Total: 10,410

Licenced Fishermen (1983): 1,424

Inshore/Nearshore Fishermen (Vessels <65', 1983): 1,095

Salmon Fishermen (1983): 383

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS < 35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (< 35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	14280	11760	13912	73	43	30	5	1	1
$:	3798	3758	4295	281	165	130	7	4	3

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	191	112	78
$:	734	431	339

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.61	0.57	0.50	0.56	8	10	10	9

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
1.75	2

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (< 35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 10% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	65	44	21	2
1982	64	34	20	10
1983	64	34	12	11
Avg.	64.3	37.33	17.7	7.7

PART D - MARKETING METHODS - 1983

Local Sales: 12,958 kg.
Commercial Buyers: 17,027 kg.

AREA PROFILE - AREA E

PART A - DEMOGRAPHICS

Geographic Location: Grates Point to Cape St. Francis

Population (1981): 62,900

Labour Force (1981): Male: 15,010 Total: 24,445

Licenced Fishermen (1983): 1,600

Inshore/Nearshore Fishermen (Vessels < 65', 1983): 1,585

Salmon Fishermen (1983): 356

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	9569	10509	7903	73	17	23	1	1	1
$:	2849	3310	2752	384	93	132	13	13	5

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	204	48	64
$:	1079	262	370

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
1.11	0.37	0.79	0.76	3	11	7	7

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
1.12	4

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 25% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	59	39	21	0
1982	56	40	14	7
1983	58	37	14	6
Avg.	57.66	38.66	16.3	4.3

PART D - MARKETING METHODS - 1983

Local Sales: 22,475 kg.
Commercial Buyers: 279 kg.

AREA PROFILE - AREA F

PART A - DEMOGRAPHICS

Geographic Location: Cape St. Francis to Cape Race

Population (1981): 138,114

Labour Force (1981): Male: 38,860 Total: 64,535

Licenced Fishermen (1983): 1,414

Inshore/Nearshore Fishermen (Vessels < 65', 1983): 1,177

Salmon Fishermen (1983): 239

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	12197	16043	13731	51	17	24	1	1	1
$:	4700	5495	4933	237	80	132	5	1	3

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	214	72	101
$:	992	335	552

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.42	0.19	0.44	0.35	10	15	10	13

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
1.02	5

PART C - COMMUNITY STRUCTURES

NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:

YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 10% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	24	15	8	3
1982	24	17	3	6
1983	25	12	6	4
Avg.	24.3	14.6	5.7	4.3

PART D - MARKETING METHODS - 1983

Local Sales: 14,623 kg.
Commercial Buyers: 9,423 kg.

AREA PROFILE - AREA G

PART A - DEMOGRAPHICS

Geographic Location: Cape Race to Cape St. Mary's

Population (1981): 7,580

Labour Force (1981): Male: 1,755 Total: 2,805

Licenced Fishermen (1983): 603

Inshore/Nearshore Fishermen (Vessels < 65', 1983): 386

Salmon Fishermen (1983): 68

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS < 35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (< 35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	2622	3069	3663	17	15	9	1	1	1
$:	1140	1187	1381	88	76	47	8	6	3

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	250	221	132
$:	1295	1118	691

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.64	0.83	0.56	0.68	7	4	8	8

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
0.88	9

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (< 35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 30% OF INSHORE (< 35') REVENUE	LESS THAN 1% OF INSHORE (< 35') REVENUE
1981	24	15	7	1
1982	23	19	8	2
1983	23	17	9	4
Avg.	23.3	17	8	2.3

PART D - MARKETING METHODS - 1983

Local Sales: 7,975 kg.
Commercial Buyers: 1,402 kg.

AREA PROFILE - AREA H

PART A - DEMOGRAPHICS

Geographic Location: Cape St. Mary's to Point Crewe

Population (1981): 30,382

Labour Force (1981): Male: 7,335 Total: 10,910

Licenced Fishermen (1983): 1,916

Inshore/Nearshore Fishermen (Vessels < 65', 1983): 1,468

Salmon Fishermen (1983): 250

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	10549	9176	8877	19	46	22	1	1	1
$:	4910	4383	4620	79	202	106	2	5	2

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	77	184	88
$:	315	809	424

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.13	0.60	0.37	0.37	15	9	12	12

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
.85	10

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 15% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	48	29	8	10
1982	57	34	17	5
1983	62	37	11	7
Avg.	55.6	33.3	12	7.3

PART D - MARKETING METHODS - 1983

Local Sales: 18,259 kg.
Commercial Buyers: 3,901 kg.

AREA PROFILE - AREA I

PART A - DEMOGRAPHICS

Geographic Location: Point Crewe to Pass Island

Population (1981): 16,178

Labour Force (1981): Male: 3,940 Total: 5,550

Licenced Fishermen (1983): 1,390

Inshore/Nearshore Fishermen (Vessels < 65', 1983): 927

Salmon Fishermen (1983): 149

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS < 35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (< 35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	4075	3418	2865	17	38	13	1	1	1
$:	2768	2815	2365	75	165	58	3	6	2

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	113	254	87
$:	503	1108	389

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.22	0.77	0.44	0.46	13	6	12	10

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
.80	11

PART C - COMMUNITY STRUCTURES

YEAR	COMMUNITIES WITH SALMON LANDINGS	NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS: A GREATER % OF INSHORE (< 35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 5% OF INSHORE (< 35') REVENUE	LESS THAN 1% OF INSHORE (< 35') REVENUE
1981	25	13	5	3
1982	28	10	12	2
1983	26	24	17	0
Avg.	26.3	15.66	11.3	1.7

PART D - MARKETING METHODS - 1983

Local Sales: 10,032 kg.
Commercial Buyers: 2,793 kg.

AREA PROFILE - AREA J

PART A - DEMOGRAPHICS

Geographic Location: Pass Island to Cape Ray

Population (1981): 21,156

Labour Force (1981): Male: 5,435 Total: 7,780

Licenced Fishermen (1983): 1,332

Inshore/Nearshore Fishermen (Vessels <65', 1983): 886

Salmon Fishermen (1983): 267

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	8992	6720	7522	110	109	85	1	2	1
$:	3708	3254	3593	473	486	362	13	15	10

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	412	409	318
$:	1772	1889	1355

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
1.05	1.94	1.65	1.55	4	2	3	3

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
1.54	3

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 30% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	25	14	8	2
1982	28	19	12	2
1983	25	15	8	2
Avg.	26	16	9.3	2

PART D - MARKETING METHODS - 1983

Local Sales: 10,258 kg.
Commercial Buyers: 74,479 kg.

AREA PROFILE - AREA K

PART A - DEMOGRAPHICS

Geographic Location: Cape Ray to Cape St. George

Population (1981): 22,343

Labour Force (1981): Male: 5,110 Total: 8,005

Licenced Fishermen (1983): 742

Inshore/Nearshore Fishermen (Vessels < 65', 1983): 742

Salmon Fishermen (1983): 113

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	2560	2450	2577	26	17	22	1	1	1
$:	1576	1342	1615	114	76	94	7	6	6

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	229	150	195
$:	1009	672	832

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.60	0.74	0.95	0.76	9	7	4	5

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
.76	12

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 20% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	26	10	3	1
1982	25	13	4	0
1983	26	22	11	0
Avg.	25.6	15	6	.3

PART D - MARKETING METHODS - 1983

Local Sales: 10,583 kg.
Commercial Buyers: 10,921 kg.

AREA PROFILE - AREA L

PART A - DEMOGRAPHICS

Geographic Location: Cape St. George to Cape St. Gregory

Population (1981): 38,616

Labour Force (1981): Male: 9,980 Total: 16,025

Licenced Fishermen (1983): 1,030

Inshore/Nearshore Fishermen (Vessels <65', 1983): 1,030

Salmon Fishermen (1983): 82

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	2699	4346	4411	12	14	11	1	1	1
$:	971	2408	2581	42	49	44	4	2	2

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	145	171	134
$:	513	598	537

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.36	0.26	0.28	0.30	11	14	13	14

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
.4	14

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 10% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	15	9	6	7
1982	22	13	7	8
1983	21	15	13	5
Avg.	19.3	12.3	8.7	6.7

PART D - MARKETING METHODS - 1983

Local Sales: 3,038 kg.
Commercial Buyers: 8,028 kg.

AREA PROFILE - AREA M

PART A - DEMOGRAPHICS

Geographic Location: Cape St. Gregory to Point Riche

Population (1981): 8,500

Labour Force (1981): Male: 2,250 Total: 3,545

Licenced Fishermen (1983): 1,160

Inshore/Nearshore Fishermen (Vessels <65', 1983):1,160

Salmon Fishermen (1983): 122

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	3334	3290	3169	19	16	30	1	1	1
$:	2298	2464	2650	63	58	124	3	3	3

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	157	131	246
$:	515	475	1017

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.23	0.31	0.77	0.44	12	12	8	11

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
.53	13

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 5% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	17	8	3	2
1982	16	5	2	7
1983	19	16	15	0
Avg.	17.3	9.6	6.7	3

PART D - MARKETING METHODS - 1983

Local Sales: 24,120 kg.
Commercial Buyers: 6,237 kg.

AREA PROFILE - AREA N

PART A - DEMOGRAPHICS

Geographic Location: Point Riche to Cape Norman

Population (1981): 6,508

Labour Force (1981): Male: 1,780 Total: 3,045

Licenced Fishermen (1983): 1,759

Inshore/Nearshore Fishermen (Vessels <65', 1983): 1,759

Salmon Fishermen (1983): 107

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	6274	7449	4457	20	25	6	1	1	1
$:	3149	3518	2550	59	77	20	2	2	1

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	187	234	56
$:	551	720	187

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
0.16	0.28	0.13	0.19	14	13	15	15

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
.3	15

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 5% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	22	8	3	8
1982	29	10	6	12
1983	18	12	4	6
Avg.	23	10	4.3	8.7

PART D - MARKETING METHODS - 1983

Local Sales: 1,715 kg.
Commercial Buyers: 4,778 kg.

AREA PROFILE - AREA O

PART A - DEMOGRAPHICS

Geographic Location: Blanc Sablon to Cape Chidley (Labrador)

Population (1981): 15,703

Labour Force (1981): Male: 3,815 Total: 5,860

Licenced Fishermen (1983): 1,930

Inshore/Nearshore Fishermen (Vessels <65', 1983): 1,930

Salmon Fishermen (1983): 801

PART B - REVENUE STRUCTURES

LANDINGS & VALUE:

	INSHORE FISHERY (VESSELS <35') (,000)			SALMON FISHERY (,000)			SALMON AS A % OF INSHORE (<35') TOTAL		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
kg:	11725	13030	12533	815	548	370	7	4	3
$:	6393	5985	5055	2584	1718	948	40	29	19

Average salmon landings & value per licenced salmon fisherman:

	1981	1982	1983
kg:	1030	692	468
$:	3267	2172	1198

REVENUE QUOTIENT:

QUOTIENT				RANKING			
1981	1982	1983	AVERAGE	1981	1982	1983	AVERAGE
3.34	3.74	3.07	3.38	1	1	1	1

EMPLOYMENT QUOTIENT(1983):

QUOTIENT	RANKING
2.05	1

PART C - COMMUNITY STRUCTURES

		NO. OF COMMUNITIES FOR WHICH SALMON REVENUE IS:		
YEAR	COMMUNITIES WITH SALMON LANDINGS	A GREATER % OF INSHORE (<35') REVENUE THAN THE AREA AVERAGE	GREATER THAN 50% OF INSHORE (<35') REVENUE	LESS THAN 1% OF INSHORE (<35') REVENUE
1981	114	62	57	1
1982	122	73	52	5
1983	117	59	42	3
Avg.	117.6	64.7	50.3	3

PART D - MARKETING METHODS - 1983

Local Sales: 42,097 kg.
Commercial Buyers: 327,441 kg.

SECTION III

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The historical background (Section I) provided information and statistics on the salmon fishery (both commercial and recreational) in Newfoundland and Labrador. As well it described recent trends in the fishery. The main point covered in the historical section is that the marginal product of an extra unit of available fishing gear in the commercial fishery is estimated to have decreased by two-thirds from the period 1959 - 1971 to 1972 - 1983 (from 88.3 kilograms per unit to 29.8 kilograms per unit). The marginal product of a rod day in the recreational fishery is estimated to have remained stable between the same periods - about 0.5 kilograms per rod day. The estimated decrease in the marginal product of fishing effort for the commercial fishery implies a movement toward zero marginal productivity (maximum sustainable yield). It is possible that the fishery has yet to reach MSY because the proxy for fishing effort is available gear, and the actual amount of gear fished may be less than the amount available to the fishery. Thus, the marginal product of available gear may be less than the marginal product of actual gear fished. Nevertheless, it has been recognized that controls have to be placed on fishing effort. In 1972 a program of limited entry was introduced to reduce fishing pressures while concomitantly increasing the average incomes of the remaining salmon fishermen. The program was intended to eliminate the marginal salmon fishermen from the fishery and

allow only bona fide fishermen access to the fishery. The program was partially responsible for the increase in average incomes of fishermen since 1972 (Figure 3, p.65). Additional steps taken in 1983 to limit the amount of gear an individual may fish, as well as the 1984 Buy-back program, are attempts to increase the spawning escapement and to eliminate marginal fishermen.

Table III (p.50) shows that the amount of gear available to the fishery has been decreasing since 1977. The 1983 increase is anomalous and is due to the splitting of licences in preparation for the gear limit restrictions. The increase in available gear, and presumably fishing effort between 1972 and 1978, and the corresponding decline in marginal product indicated that the salmon fishery was reaching its maximum sustainable yield. Despite the decrease in available gear since 1978, marginal product has continued to decline. This suggests that further reductions in effort may be necessary if there is to be an improvement in marginal productivity. Such reductions should eventually increase individual catches and incomes for the remaining fishermen.

Section II is an attempt to determine the economic impact of the salmon fishery upon the various statistical areas within Newfoundland and Labrador. The quotients presented in the section are the ratio of the value of the salmon fishery to the total inshore fishery relative to the entire province. The areas are ranked according to revenue and employment quotients in

Tables XIV and XV (pp. 61, 62). These quotients can then be used as weighting factors for the distributional aspects of any management decision regarding the salmon fishery. The average of revenue quotients for the years 1981, 1982 and 1983 may be indicative of the long-run trend of an area. Table XIV can be divided into three distinct groups based on the three-year average. The first group (bounded by the first and third ranked areas) includes areas where salmon revenues form a significant portion of the inshore revenues of the area relative to the entire province (greater than the provincial average). The second group (bounded by the fourth and ninth ranked areas) includes areas that have medium dependency upon salmon revenues, while the last group of six consists of areas that have moderate to low dependency.

The first group includes statistical areas A, J and O. Salmon revenues from these three areas comprised 62% of the total salmon revenues in 1981, 60% in 1982 and 54% in 1983.

Area O is ranked first and is the most dependent on the salmon revenues of all the areas in Newfoundland and Labrador. Salmon revenues represent more than 29% of the inshore fishery revenues in Area O. The average landed value per licenced salmon fisherman in Area O has ranged from $3,300 in 1981 to $1,200 in 1983. An average of 50 of the 117 fish landing sites in Area O depend upon salmon revenues for more than 50% of total fishing revenues. This emphasizes the importance of the salmon fishery upon the coastal communities of the area.

Area A is ranked second in the three-year average revenue quotients and the importance of the salmon fishery is emphasized by the average landed value per licenced salmon fisherman of almost $1,000 in 1983 (down from $1,700 in 1981).

Area J is ranked third in the three-year average. In 1981 the average landed value per licenced salmon fisherman was almost $1,800 declining to almost $1,400 in 1983. Area J has suffered severe restrictions on the salmon fishery since 1983.

The above three areas all have greater than the average provincial dependency upon the salmon fishery and, therefore a partial or complete closing of the salmon fishery would have a severe effect upon the inshore fishermen's incomes in these areas.

The second group includes statistical areas B, C, D, E, G and K and has a medium dependence upon the salmon fishery. The areas in this section earned 30% of the total salmon revenues in 1981, 27% in 1982 and 32% in 1983. Some of these areas have considerable fluctuations in salmon landings from year to year. Areas C, D and E have employment quotients greater than one (i.e. greater concentrations of licensed salmon fishermen) and there are communities within these areas that have a substantial dependency upon the salmon fishery. An average of 30 communities in Area B depend upon salmon revenues for more than 25% of total inshore revenues, while 16 in Area E derive over 25% of inshore revenues from salmon. Thus any changes in the salmon fishery will severely affect the inshore fishermen of these communities.

The third group includes Statistical Areas F, H, I, L, M and N which show a moderate to low dependency upon the salmon fishery. These six areas, in aggregate, accounted for 8% of the total salmon revenues in 1981, 13% in 1982 and 14% in 1983. All of the above seven areas have an employment quotient less than one. Although the value of salmon landings is high in some areas, it is relatively low in relation to total inshore landed value. There are still, however, some communities where dependence on the salmon fishery is very high.

RECOMMENDATIONS

The basic recommendations arising from this study are as follows: firstly, the analysis indicates that the marginal product of fishing effort (as measured by available gear) is declining, if not already negative, and to improve individual catches and incomes, consideration must be given to further reductions in fishing effort; secondly, from the area profiles it has become evident that not all areas have the same dependency on the salmon fishery, and before action is taken to change the current status of the salmon fishery the dependency of areas and communities on the salmon fishery, along with the alternative employment available in the area or community, should be examined. Although the seasonal changes introduced in 1984 were designed to affect all fishermen equally, they do not achieve this because the level of dependence on the salmon fishery varies around the coast. The implementation of the buy-back of licences

goes a long way in reducing overall effort, and combined with season changes may help to achieve the twin goals of stock regeneration and improved marginal productivity. A study to determine the effects of season changes, however, is a necessity as such changes can have the effect of making the fishery uneconomic (non-viable) for all fishermen.

APPENDIX

TABLE I
NEWFOUNDLAND AND LABRADOR COMMERCIAL SALMON LANDINGS, 1910-1983
(tonnes)

YEAR	LANDINGS	YEAR	LANDINGS	YEAR	LANDINGS
1910	1,084	1935	2,135	1960	949
1911	1,232	1936	1,955	1961	951
1912	1,460	1937	2,428	1962	1,017
1913	1,557	1938	2,629	1963	1,217
1914	1,468	1939	1,888	1964	1,268
1915	1,223	1940	2,274	1965	1,164
1916	1,029	1941	1,801	1966	1,399
1917	1,116	1942	1,904	1967	1,822
1918	1,254	1943	1,641	1968	1,445
1919	1,086	1944	1,636	1969	1,441
1920	1,123	1945	1,462	1970	1,595
1921	1,579	1946	1,856	1971	1,576
1922	1,819	1947	1,782	1972	1,395
1923	1,831	1948	1,931	1973	2,008
1924	1,622	1949	1,844	1974	2,011
1925	1,640	1950	1,667	1975	2,044
1926	2,022	1951	1,520	1976	2,012
1927	2,210	1952	1,552	1977	1,939
1928	2,007	1953	1,404	1978	1,110
1929	2,236	1954	1,070	1979	986
1930	3,117	1955	796	1980	2,103
1931	2,971	1956	748	1981	1,909
1932	2,278	1957	893	1982	1,320
1933	2,272	1958	979	1983	1,029
1934	2,180	1959	1,066		

Source:

1910-1951: May, A.W. and W.H. Lear, Digest of Canadian Atlantic Salmon Catch Statistics, Fisheries Research Board of Canada, Tech. Rep. 270, August, 1971.

1952-1983: Ash, E.G.M., Atlantic Salmon Commercial Catch Statistics, Dept. of Fisheries and Oceans, Canadian Data Report of Fisheries and Aquatic Sciencies, No. 478, October, 1984.

TABLE II
NUMBER OF LICENCED COMMERCIAL SALMON FISHERMEN
NEWFOUNDLAND AND LABRADOR, 1960 - 1983

YEAR	NUMBER OF FISHERMEN
1960	5,350
1961	5,159
1962	5,481
1963	5,772
1964	7,485
1965	7,782
1966	7,108
1967	7,408
1968	7,342
1969	6,846
1970	7,919
1971	6,403
1972	4,976
1973	5,050
1974	5,880
1975	6,981
1976	6,287
1977	5,756
1978	5,815
1979	5,768
1980	5,592
1981	5,402
1982	5,069
1983	5,063

Source: Ash, E.G.M., Atlantic Salmon Commercial Catch Statistics Dept. of Fisheries and Oceans, Canadian Data Report of Fisheries and Aquatic Sciences, No. 478, October, 1984.

Jones, J.B., et al., The Economic Impact of the Newfoundland and Labrador Commercial Salmon Fishery - An Intra-Regional Study of Community Dependence, Economics Branch, Dept. of Fisheries and Oceans, Newfoundland Region, July, 1978.

TABLE III
UNITS OF LICENCED FISHING GEAR AVAILABLE TO THE SALMON FISHERY, NEWFOUNDLAND AND LABRADOR, 1959-1983

YEAR	NUMBER OF UNITS
1959	10,995
1960	12,063
1961	12,012
1962	12,780
1963	13,008
1964	15,246
1965	16,079
1966	15,916
1967	17,015
1968	17,393
1969	16,709
1970	19,547
1971	17,352
1972	13,600
1973	16,347
1974	19,798
1975	25,181
1976	23,749
1977	21,775
1978	22,284
1979	22,169
1980	21,918
1981	21,032
1982	18,634
1983	19,565

* 1 Unit = 50 Fathoms

Source: Ash, E.G.M., Atlantic Salmon Commercial Catch Statistics Dept. of Fisheries and Oceans, Canadian Data Report of Fisheries and Aquatic Sciences, No. 478, October, 1984.

Jones, J.B., et al., The Economic Impact of the Newfoundland and Labrador Commercial Salmon Fishery - An Intra-Regional Study of Community Dependence, Economics Branch, Dept. of Fisheries and Oceans, Newfoundland Region, July, 1978.

TABLE IV
MARITIMES AND QUEBEC COMMERCIAL SALMON LANDINGS 1910 - 1983
(tonnes)

YEAR	LANDINGS	YEAR	LANDINGS	YEAR	LANDINGS
1910	1,371	1935	1,554	1960	687
1911	1,396	1936	1,529	1961	632
1912	1,393	1937	1,455	1962	703
1913	1,825	1938	1,449	1963	634
1914	1,733	1939	1,146	1964	801
1915	1,806	1940	1,183	1965	952
1916	1,896	1941	1,697	1966	960
1917	1,808	1942	1,110	1967	1,041
1918	1,684	1943	1,274	1968	660
1919	904	1944	1,056	1969	516
1920	896	1945	817	1970	504
1921	1,563	1946	846	1971	253
1922	1,709	1947	930	1972	129
1923	2,118	1948	1,138	1973	161
1924	2,669	1949	1,078	1974	210
1925	2,689	1950	1,018	1975	174
1926	2,461	1951	817	1976	199
1927	2,279	1952	782	1977	195
1928	1,263	1953	745	1978	220
1929	1,631	1954	738	1979	98
1930	2,984	1955	417	1980	289
1931	2,547	1956	464	1981	250
1932	1,766	1957	495	1982	219
1933	2,064	1958	602	1983	192
1934	1,663	1959	747		

Source: 1910-1970: May, A.W. and W.H. Lear, Digest of Canadian Atlantic Salmon Catch Statistics, Fisheries Research Board of Canada, Tech. Rep. 270, August, 1971.

1971-1983: Canadian Fisheries Annual Statistical Review, Department of Fisheries and Oceans, Ottawa.

TABLE V
COMMERCIAL ATLANTIC SALMON LANDINGS AND VALUE, 1952 - 1983

YEAR	ATLANTIC		MARITIMES & QUEBEC		NFLD. AND LABRADOR	
	QUANTITY (tonnes)	VALUE ($,000)	QUANTITY (tonnes)	VALUE ($,000)	QUANTITY (tonnes)	VALUE ($,000)
1952	2,317	1,430	769	748	1,548	682
1953	2,123	1,356	723	651	1,400	705
1954	1,794	1,281	726	697	1,068	584
1955	1,199	892	404	416	795	476
1956	1,202	982	456	531	741	451
1957	1,376	1,071	485	521	891	550
1958	1,566	1,226	589	669	977	557
1959	1,794	1,453	731	797	1,063	656
1960	1,622	1,461	674	820	948	641
1961	1,572	1,417	624	756	949	661
1962	1,713	1,752	698	917	1,015	835
1963	1,838	1,834	624	822	1,214	1,012
1964	2,056	2,073	791	1,056	1,266	1,017
1965	2,097	2,221	935	1,199	1,161	1,022
1966	2,342	2,536	945	1,291	1,397	1,245
1967	2,853	3,087	1,035	1,410	1,818	1,677
1968	2,104	2,332	661	968	1,442	1,364
1969	1,957	2,282	523	867	1,434	1,415
1970	2,093	2,727	502	981	1,591	1,746
1971	1,831	2,255	253	536	1,578	1,719
1972	1,525	2,129	129	372	1,396	1,757
1973	2,178	3,470	161	416	2,017	3,054
1974	2,221	3,658	210	546	2,010	3,112
1975	2,218	3,618	174	521	2,044	3,097
1976	2,196	4,270	199	638	1,997	3,632
1977	2,134	5,488	195	786	1,939	4,702
1978	1,400	4,455	220	956	1,180	3,496
1979	1,084	3,713	98	481	986	3,232
1980	2,391	8,964	289	1,512	2,102	7,452
1981	2,154	8,061	250	1,409	1,910	6,691
1982	1,536	6,068	215	1,373	1,321	4,695
1983	1,221	4,834	192	1,280	1,029	3,554

Source: Canadian Fisheries Annual Statistical Review, Department of Fisheries and Oceans, Ottawa.

TABLE VI
NEWFOUNDLAND AND LABRADOR COMMERCIAL SALMON LANDINGS AS A PERCENTAGE OF TOTAL ATLANTIC CANADA COMMERCIAL SALMON LANDINGS (BY WEIGHT), 1952 - 1983*

YEAR	PERCENTAGE	YEAR	PERCENTAGE
1952	66.8	1968	68.5
1953	65.9	1969	73.3
1954	59.5	1970	76.0
1955	66.3	1971	86.2
1956	61.6	1972	91.5
1957	64.8	1973	92.6
1958	62.4	1974	90.5
1959	59.3	1975	92.2
1960	58.4	1976	90.9
1961	60.4	1977	91.1
1962	59.3	1978	84.3
1963	66.1	1979	91.0
1964	61.6	1980	87.9
1965	55.4	1981	88.7
1966	59.6	1982	86.0
1967	63.7	1983	84.3

* based on Table V.

TABLE VII
AVERAGE LANDED VALUE OF
COMMERCIAL SALMON ($/KG), 1952 - 1983*

YEAR	ATLANTIC	MARITIMES & QUEBEC	NEWFOUNDLAND & LABRADOR
1952	0.617	0.973	0.441
1953	0.639	0.900	0.504
1954	0.714	0.960	0.547
1955	0.744	1.030	0.599
1956	0.817	1.164	0.609
1957	0.778	1.074	0.617
1958	0.783	1.136	0.570
1959	0.810	1.090	0.617
1960	0.901	1.217	0.676
1961	0.901	1.212	0.697
1962	1.023	1.314	0.823
1963	0.998	1.317	0.834
1964	1.008	1.335	0.803
1965	1.059	1.282	0.880
1966	1.083	1.366	0.891
1967	1.082	1.362	0.922
1968	1.108	1.464	0.946
1969	1.166	1.658	0.987
1970	1.303	1.954	1.097
1971	1.232	2.119	1.089
1972	1.396	2.884	1.259
1973	1.593	2.584	1.514
1974	1.647	2.600	1.548
1975	1.631	2.994	1.515
1976	1.944	3.206	1.819
1977	2.572	4.031	2.425
1978	3.182	4.345	2.963
1979	3.425	4.908	3.279
1980	3.749	5.232	3.545
1981	3.742	5.636	3.503
1982	3.951	6.386	3.554
1983	3.959	6.667	3.454

* based on Table V.

TABLE VIII

AVERAGE LANDED VALUE OF COMMERCIAL SALMON BY STATISTICAL AREA
NEWFOUNDLAND AND LABRADOR, 1968 - 1983
($/Kg)

AREA	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
A	0.68	0.71	0.82	0.93	1.04	1.46	1.32	1.30	1.57	2.34	2.82	2.93	3.31	3.04	3.11	3.11
B	0.99	1.04	1.04	1.04	1.46	1.50	1.72	1.65	1.83	2.12	2.87	3.11	3.42	3.79	3.81	3.99
C	0.88	1.04	1.12	1.17	1.26	1.54	1.59	1.65	2.01	2.14	3.26	3.37	3.48	3.55	3.70	3.86
D	1.08	1.01	1.23	1.19	1.32	1.70	1.54	1.70	2.12	2.36	3.17	3.04	3.44	3.86	3.88	4.34
E	1.28	1.48	1.34	1.65	1.91	2.12	1.92	2.20	2.56	3.04	3.73	4.10	4.70	5.29	5.47	5.80
F	1.28	1.26	1.19	1.46	1.81	1.87	2.03	2.01	2.34	2.89	3.46	4.08	4.56	4.63	4.67	5.51
G	1.10	1.10	1.10	1.28	1.70	1.72	1.90	2.31	2.36	2.54	3.06	3.90	3.90	5.07	5.22	5.04
H	0.99	0.97	1.04	1.30	1.17	1.54	1.59	1.72	1.90	2.18	2.71	3.75	3.81	4.10	4.41	4.81
I	1.08	1.12	1.08	1.21	1.43	1.50	1.83	1.73	2.18	2.29	2.80	3.68	3.88	4.43	4.37	4.50
J	1.21	1.32	1.50	1.34	1.52	1.74	1.61	1.76	2.18	2.69	3.51	3.73	4.17	4.32	4.45	4.28
K	1.26	0.99	1.32	1.65	1.90	1.81	1.85	1.94	1.98	2.78	2.84	3.26	3.75	4.41	4.48	4.37
L	0.88	1.04	1.12	1.10	1.39	1.37	1.76	1.43	1.94	2.62	3.02	3.20	3.33	3.51	3.51	3.97
M	0.84	0.84	0.90	0.97	1.28	1.50	1.92	2.03	1.85	2.54	2.84	3.33	3.53	3.28	3.55	4.08
N	0.73	0.95	0.73	0.99	1.52	1.30	1.34	1.39	1.65	2.43	2.73	2.98	3.06	3.02	3.16	3.05
O	0.71	0.77	0.99	0.97	1.30	1.23	1.32	1.19	1.59	2.43	2.76	3.33	3.35	3.17	3.13	2.56
TOTAL NFLD. AVG.	0.95	0.99	1.10	1.10	1.26	1.52	1.54	1.52	1.83	2.45	2.96	3.28	3.55	3.50	3.55	3.45

TABLE IX

LOCAL SALES AS A PERCENTAGE OF TOTAL COMMERCIAL SALMON LANDINGS (BY WEIGHT)
NEWFOUNDLAND AND LABRADOR, 1973-1983

STATISTICAL AREA	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	11-YEAR AVERAGE
A	7	12	10	6	6	10	10	7	8	12	10	8.9
B	54	75	66	52	58	46	66	46	49	42	44	54.3
C	27	49	36	41	29	37	42	26	31	35	32	35.0
D	27	38	39	49	33	33	37	34	32	36	43	36.5
E	85	84	91	91	87	76	90	88	88	88	99	87.9
F	50	47	49	55	57	36	51	71	60	48	61	53.2
G	88	95	95	100	95	79	93	88	89	90	85	90.6
H	73	68	82	71	50	55	54	62	74	76	82	67.9
I	67	59	66	57	87	80	81	82	83	75	78	74.1
J	7	8	12	16	12	12	15	10	11	15	12	11.8
K	77	88	77	77	63	64	74	62	64	74	54	70.4
L	50	76	40	56	39	39	34	12	22	20	24	37.5
M	42	94	95	92	56	93	46	50	64	51	80	69.4
N	2	33	21	10	15	16	5	8	15	40	26	17.4
O	4	3	5	2	2	14	7	4	5	8	12	6.0
TOTAL	n.a.	28	28	20	22	27	24	22	22	24	27	24.4

n.a. - not available

TABLE X

ATLANTIC SALMON RECREATIONAL CATCH AND EFFORT, 1953-1983

YEAR	ATLANTIC		MARITIMES & QUEBEC[1]		NEWFOUNDLAND & LABRADOR[2]	
	EFFORT (ROD DAYS)	QUANTITY (t)	EFFORT (ROD DAYS)	QUANTITY (t)	EFFORT (ROD DAYS)	QUANTITY (t)
1953	172,560*	245	129,536*	211	43,024	34
1954	216,204*	211	187,532*	190	28,672	21
1955	170,075*	172	147,447*	148	22,628	24
1956	207,773*	221	154,274*	186	53,499	35
1957	153,422	195	119,525	149	33,897	46
1958	204,203	301	169,118	252	35,085	49
1959	171,216	183	134,178	140	37,038	43
1960	196,616	147	160,223	108	36,393	39
1961	203,460	140	166,331	104	37,129	36
1962	225,539	187	175,557	135	49,982	52
1963	218,934	303	156,862	234	62,072	69
1964	208,214	279	133,884	193	74,330	86
1965	195,586	269	125,517	200	70,069	69
1966	213,242	312	142,209	246	71,033	66
1967	213,949	284	138,055	230	75,894	54
1968	187,253	178	107,624	114	79,629	64
1969	198,165	227	112,473	156	85,692	71
1970	194,017	219	103,797	153	90,220	66
1971	180,482	143	99,796	87	80,686	56
1972	187,141	217	112,757	167	74,384	50
1973	246,060	256	149,354	178	96,706	78
1974	286,342	288	172,651	232	113,691	56
1975	225,594	229	118,478	159	107,116	70
1976	265,688	299	142,686	209	123,002	90
1977	320,248	393	201,178	297	119,070	96
1978	249,752	210	146,868	148	102,884	62
1979	248,873	187	161,074	123	87,799	64
1980	302,309	290	193,029	212	109,280	78
1981	339,157	279	211,448	185	127,709	94
1982	368,661	241	232,920	157	135,741	84
1983	293,773*	185	160,808*	116	132,965	69

* Rod days for Quebec not available. However, quantity does include Quebec.

SOURCES: 1) Report of the Socio-Economic Sub-Committee To The Atlantic Salmon Task Force Review; Ministére du Loisir de la Chasse et de la Pêche de Quebec;

2) Report of the Socio-Economic Sub-Committee To The Atlantic Salmon Task Force Review; Atlantic Salmon Angled Catch & Effort Data, Newfoundland and Labrador, 1953-83, Fisheries Research Branch, Dept. of Fisheries & Oceans, St. John's, Nfld.

TABLE XI

RECREATIONAL SALMON CATCH (NUMBERS OF FISH), 1970 - 1983

YEAR	NEWFOUNDLAND & LABRADOR[1]			MARITIMES & QUEBEC[2]	ATLANTIC REGION TOTAL
	SMALL*	LARGE	TOTAL	TOTAL	
1970	34,472	2,695	37,167	47,695	84,862
1971	30,623	2,088	32,711	26,653	59,364
1972	27,371	1,804	29,175	46,447	75,622
1973	43,004	2,932	45,936	42,245	88,181
1974	28,986	2,016	31,002	55,421	86,423
1975	37,362	1,568	38,930	38,016	76,946
1976[1]	40,189	1,881	42,070	41,099	83,169
1977[1]	38,946	4,041	42,987	42,131	85,118
1978	31,297	2,320	33,617	33,199	66,816
1979	35,268	1,170	36,438	33,344	69,782
1980	39,649	2,811	42,460	54,726	97,186
1981	51,869	1,887	53,756	47,957	101,713
1982	45,975	1,869	47,844	46,873	94,717
1983	36,792	1,810	38,602	31,795	70,397

* Grilse; $<$2.7 kg.

Sources:

1) Atlantic Salmon Angled Catch and Effort Data, Newfoundland and Labrador, 1953-1983. Fisheries Research Branch, Department of Fisheries and Oceans, St. John's, Nfld.

2) 1983 Atlantic Salmon Sport Catch Statistics, Maritime Provinces. Fisheries Research Branch, Department of Fisheries and Oceans, Halifax, N.S.

TABLE XII

NEWFOUNDLAND AND LABRADOR RECREATIONAL SALMON CATCH
AS A PERCENTAGE OF TOTAL ATLANTIC CANADA RECREATIONAL SALMON CATCH
1953-1983

YEAR	% BY WEIGHT	% BY NUMBER	YEAR	% BY WEIGHT	% BY NUMBER
1953	13.9	n.a.	1969	31.3	n.a.
1954	15.6	n.a.	1970	30.1	43.8
1955	13.9	n.a.	1971	39.2	55.1
1956	15.8	n.a.	1972	23.0	28.6
1957	23.6	n.a.	1973	30.5	52.1
1958	16.3	n.a.	1974	19.4	35.9
1959	23.5	n.a.	1975	30.6	50.6
1960	26.5	n.a.	1976	30.1	50.6
1961	25.7	n.a.	1977	24.4	50.5
1962	27.8	n.a.	1978	29.5	50.3
1963	22.8	n.a.	1979	34.2	52.2
1964	30.8	n.a.	1980	26.9	43.7
1965	25.7	n.a.	1981	33.7	52.9
1966	21.2	n.a.	1982	34.9	50.5
1967	19.0	n.a.	1983	37.3	54.8
1968	36.0	n.a.			

n.a. - not available.

TABLE XIII

RECREATIONAL SALMON CATCH, EFFORT AND CATCH-PER-UNIT EFFORT, 1970 - 1983

YEAR	ATLANTIC					MARITIMES & QUEBEC					NEWFOUNDLAND & LABRADOR				
	Rod Days (,000)	Quantity (t)	Kg per Rod Day	# Fish (,000)	No. Per Rod Day	Rod Days (,000)	Quantity (t)	Kg per Rod Day	# Fish (,000)	No. Per Rod Day	Rod Days (,000)	Quantity (t)	Kg per Rod Day	# Fish (,000)	No. Per Rod Day
1970	194	219	1.13	85	0.44	104	153	1.47	48	0.46	90	66	0.73	37	0.41
1971	180	143	0.79	59	0.33	100	87	0.87	27	0.27	81	56	0.69	33	0.41
1972	187	217	1.16	76	0.41	113	167	1.48	46	0.41	74	50	0.68	29	0.39
1973	246	256	1.04	88	0.36	149	178	1.19	42	0.28	97	78	0.80	46	0.47
1974	286	288	1.01	86	0.30	173	232	1.34	55	0.32	114	56	0.49	31	0.27
1975	226	229	1.01	77	0.34	118	159	1.35	38	0.32	107	70	0.65	39	0.36
1976	266	299	1.12	83	0.31	143	209	1.46	41	0.29	123	90	0.73	42	0.34
1977	320	393	1.23	85	0.27	201	297	1.48	42	0.21	119	96	0.81	43	0.36
1978	250	210	0.84	67	0.27	147	148	1.01	33	0.22	103	62	0.60	34	0.33
1979	249	187	0.75	70	0.28	161	123	0.76	33	0.20	88	64	0.73	36	0.41
1980	302	290	0.96	97	0.32	193	212	1.10	55	0.28	109	78	0.72	42	0.39
1981	339	279	0.82	102	0.30	211	185	0.88	48	0.23	128	94	0.73	54	0.42
1982	369	241	0.65	95	0.26	233	157	0.67	47	0.20	136	84	0.62	48	0.35
1983*	294	134	0.46	58	0.20	161	65	0.40	20	0.12	133	69	0.52	39	0.29

* Does not include Quebec as rod days are not available. The Quebec catch was 56 tonnes (12,079 fish) and is included in Table XI.

TABLE XIV
AREA RANKING BY ANNUAL REVENUE QUOTIENT
NEWFOUNDLAND AND LABRADOR, 1981 - 1983

RANK	1981		1982		1983		3-YEAR AVERAGE	
	AREA	QUOTIENT	AREA	QUOTIENT	AREA	QUOTIENT	AREA	QUOTIENT
1	O	3.34	O	3.74	O	3.076	O	3.383
2	A	2.01	J	1.94	A	2.05	A	1.743
3	E	1.11	A	1.17	J	1.65	J	1.547
4	J	1.05	G	0.83	K	0.95	B	0.787
5	B	0.79	B	0.78	C	0.89	K	0.763
6	C	0.66	I	0.77	B	0.79	C	0.757
7	G	0.64	K	0.74	E	0.78	E	0.753
8	D	0.61	C	0.72	M	0.77	G	0.673
9	K	0.60	H	0.60	G	0.55	D	0.560
10	F	0.42	D	0.57	D	0.50	I	0.463
11	L	0.36	E	0.37	F	0.44	M	0.437
12	M	0.23	M	0.31	I	0.40	H	0.367
13	I	0.22	N	0.28	H	0.37	F	0.350
14	N	0.16	L	0.26	L	0.28	L	0.300
15	H	0.13	F	0.19	N	0.13	N	0.190

TABLE XV
AREA RANKING BY EMPLOYMENT QUOTIENT
NEWFOUNDLAND AND LABRADOR - 1983

RANK	AREA	QUOTIENT
1	O	2.08
2	D	1.75
3	J	1.54
4	E	1.12
5	F	1.02
6	C	1.00
7	A	0.98
8	B	0.91
9	G	0.88
10	H	0.85
11	I	0.80
12	K	0.76
13	M	0.53
14	L	0.40
15	N	0.30

FIGURE 1. CANADIAN ATLANTIC SALMON COMMERCIAL LANDINGS, 1910–1983

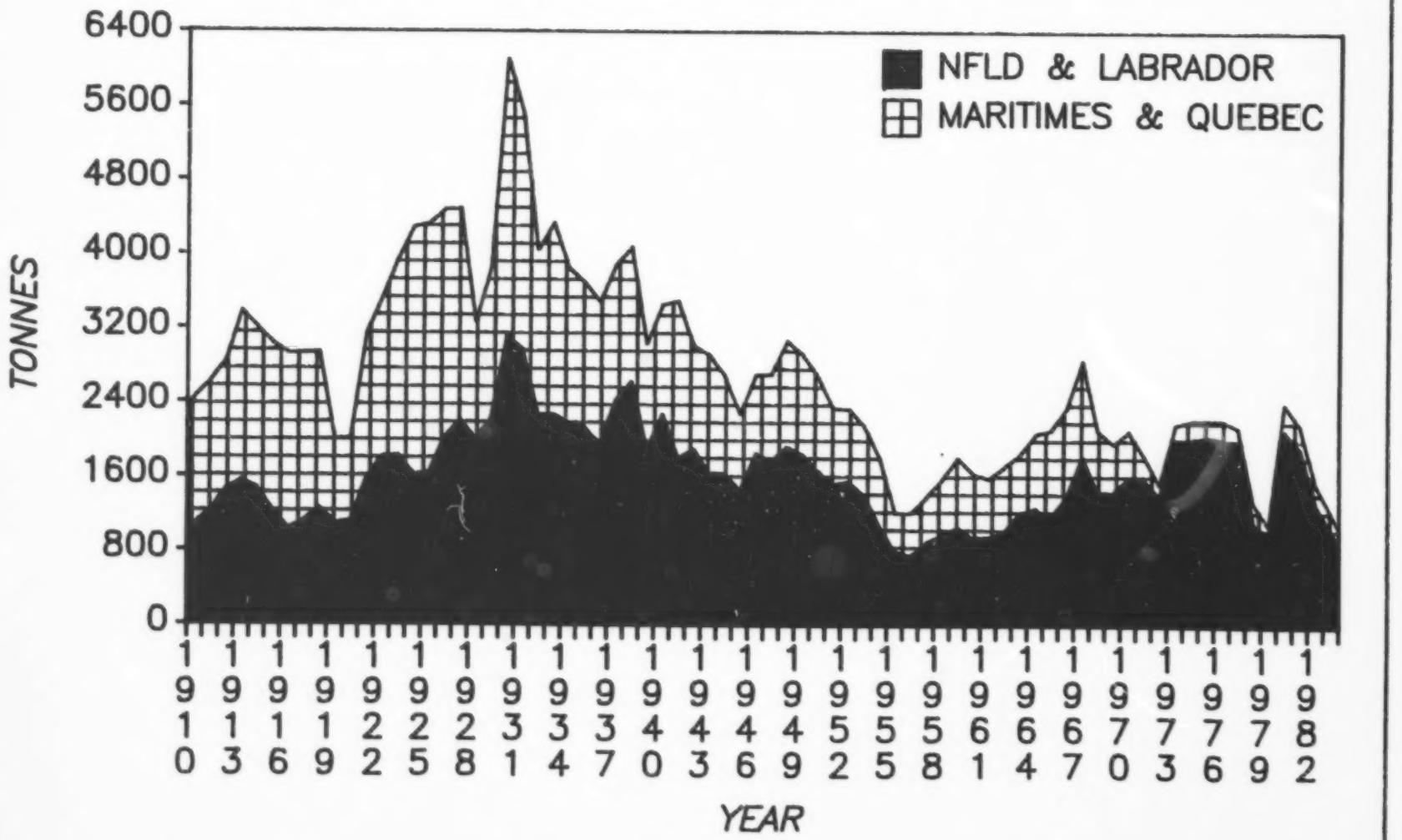


FIGURE 2. CANADIAN ATLANTIC SALMON COMMERCIAL LANDINGS, 1953–1983

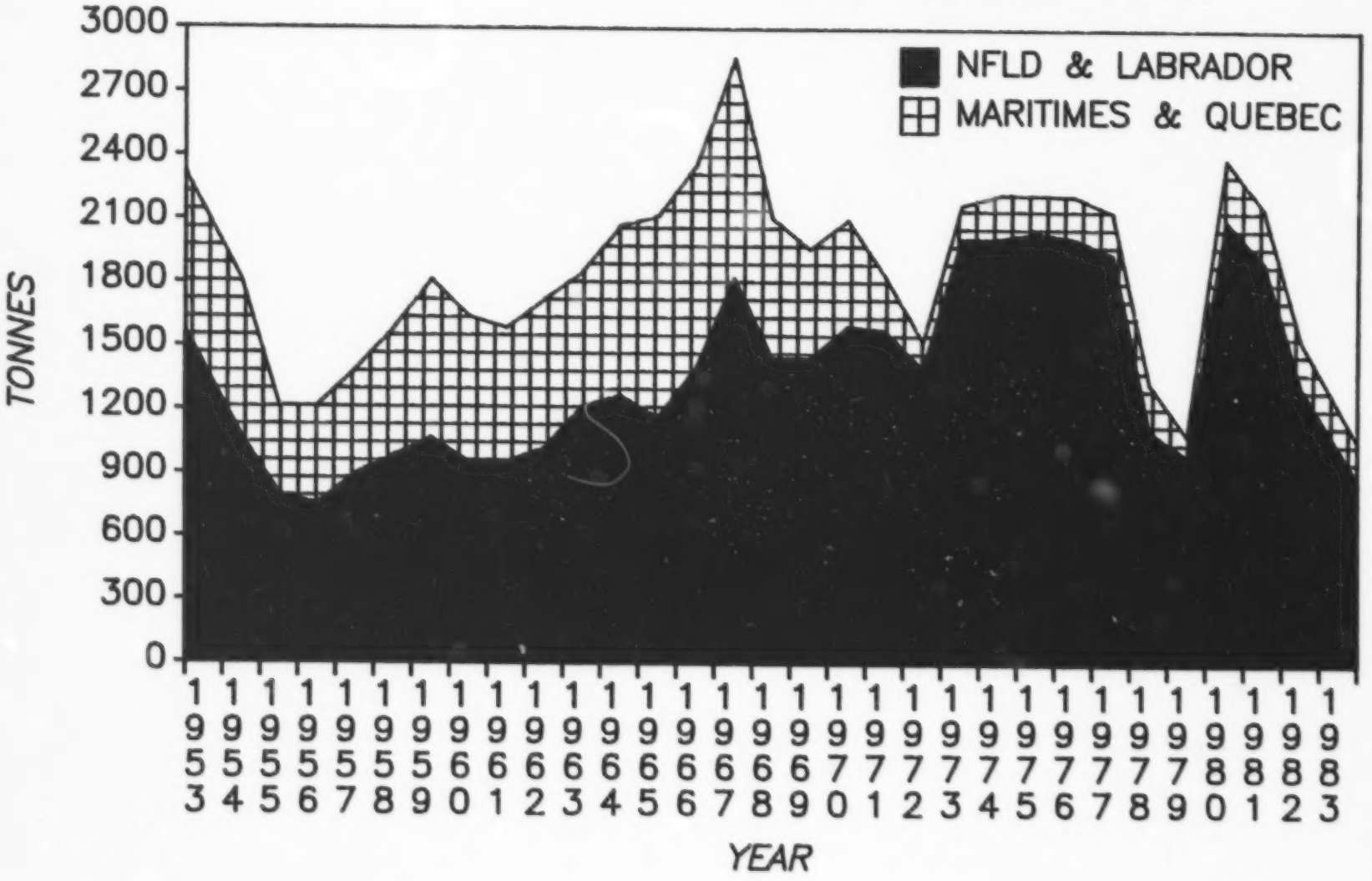


FIGURE 3. SALMON QUANTITY AND VALUE PER SALMON FISHERMAN, NEWFOUNDLAND AND LABRADOR, 1960–1983

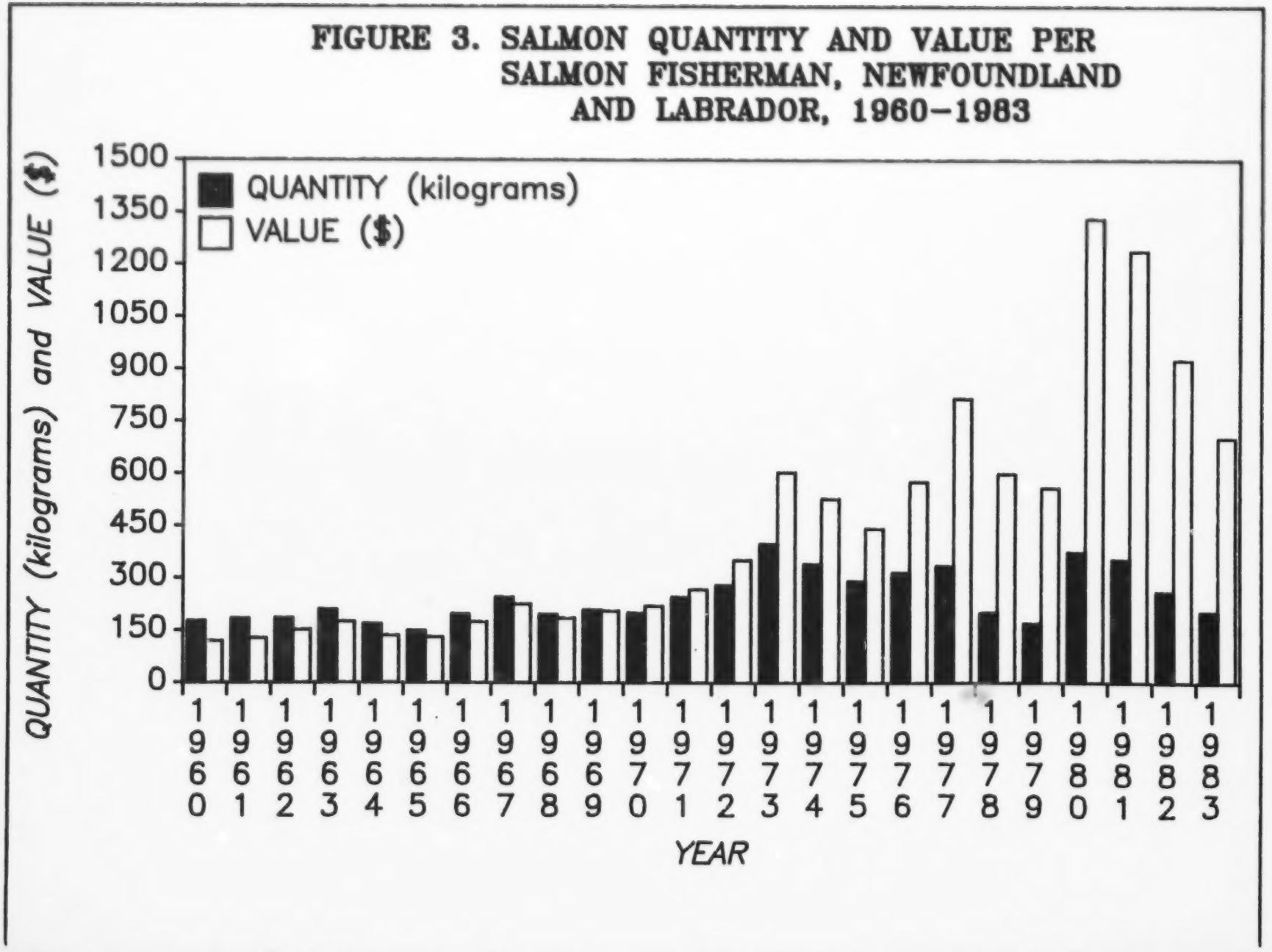


FIGURE 4. RECREATIONAL SALMON CATCH AND EFFORT, NEWFOUNDLAND AND LABRADOR, 1970–1983

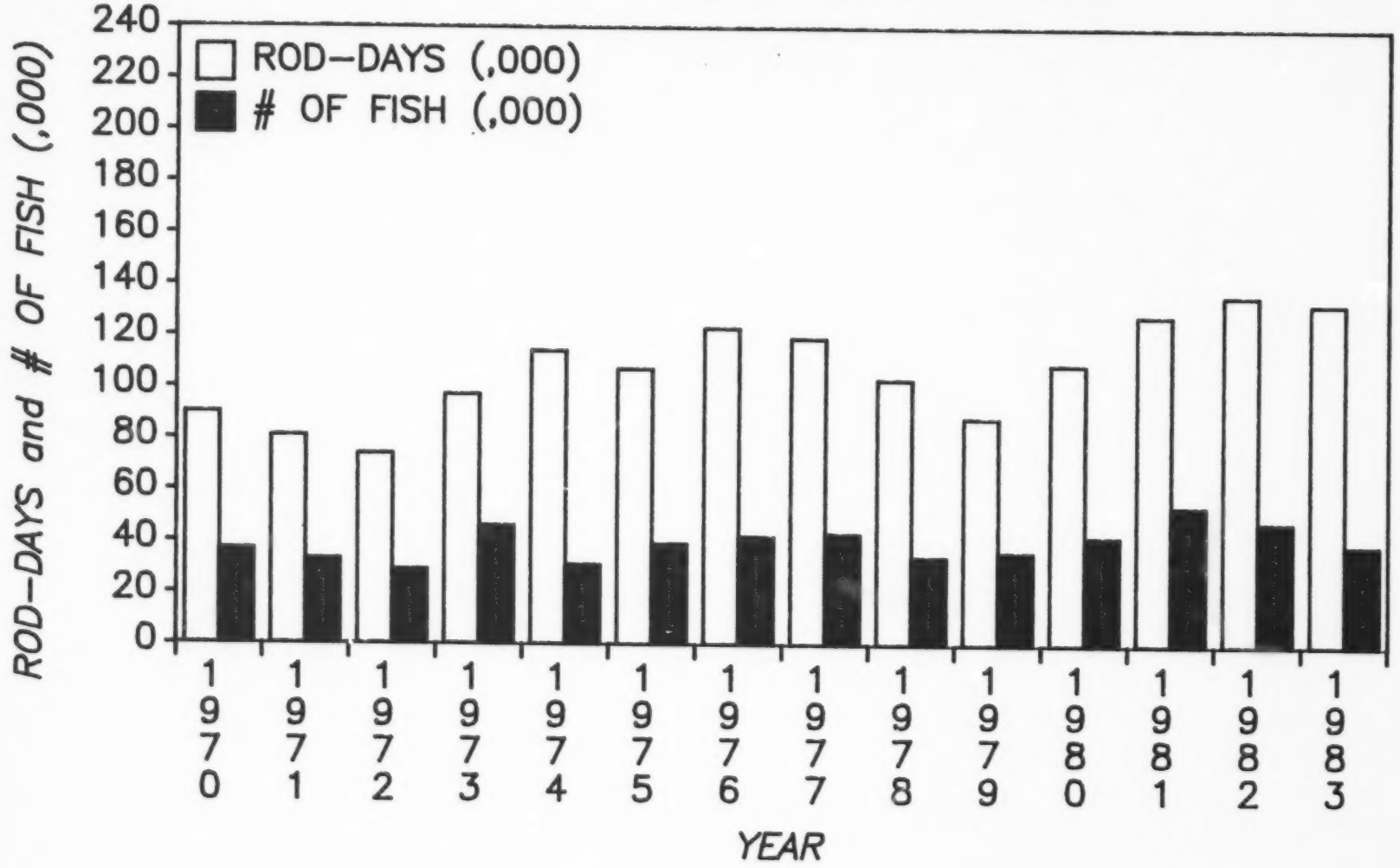


FIGURE 5. RECREATIONAL SALMON CATCH AND EFFORT MARITIMES AND QUEBEC, 1970–1982

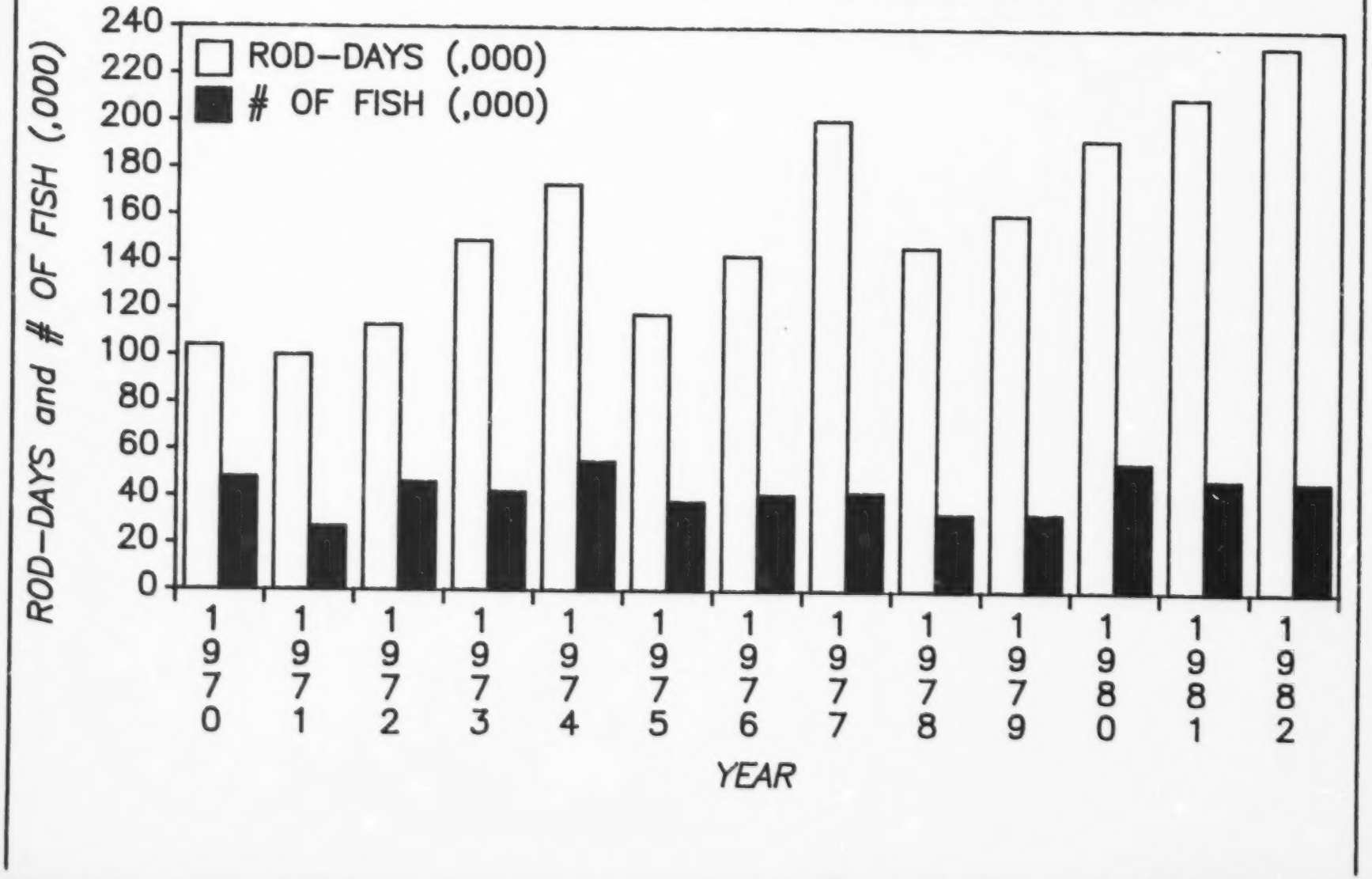
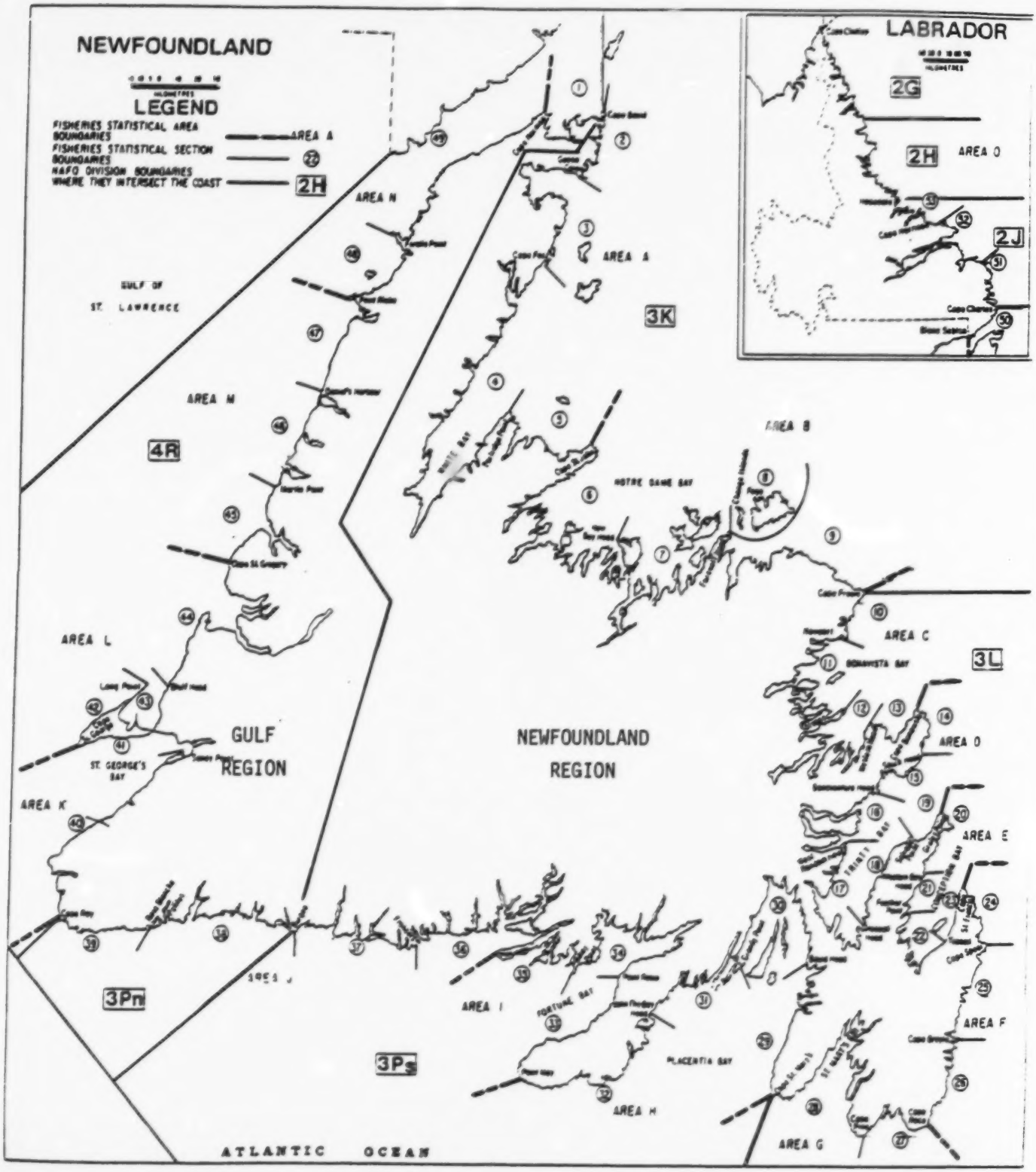


FIGURE 6 . FISHERIES STATISTICAL BOUNDARIES AND NORTHWEST ATLANTIC FISHERIES ORGANIZATION (NAFO) BOUNDARIES



PUBLICATIONS LISTING

PUBLICATIONS LISTING OF THE ECONOMICS BRANCH FISHERIES AND OCEANS P.O. BOX 5667 ST. JOHN'S, NFLD.

1983

1. A Review of the Newfoundland Bait Service: Action Alteratives for the 80's, W.M. Follett, February, 1983. (INTERNAL-CONFIDENTIAL)

2. Costs and Earnings of Selected Inshore and Nearshore Fishing Enterprises in the Newfoundland Region, 1981, Economics Branch, May, 1983.

3. Cost Recovery and Proposed Action Plan for Newfoundland Bait Service, W.M. Follett, July, 1983. (INTERNAL-CONFIDENTIAL)

4. Costs and Earnings of Shrimp Fishing Enterprises in the Esquiman Channel, Gulf of St. Lawrence, 1981, Economics Branch, August, 1983.

5. An Economic Assessment of the Esquiman Channel Shrimp Fishery, Gulf of St. Lawrence, 1981, P.R. Hood, August, 1983.

6. Costs and Earnings of Selected Inshore Fishing Enterprises by Vessel Type and NAFO Division, Newfoundland Region, 1981, Economics Branch, August, 1983.

7. Costs and Earnings of Selected Nearshore Fishing Enterprises by Vessel Type and NAFO Division, Newfoundland Region, 1981, Economics Branch, August, 1983.

8. Regional Profiles of the Area North of 50° Latitude in Newfoundland and Labrador, K. Voutier, October, 1983 (INTERNAL-CONFIDENTIAL)

1984

9. An Assessment of the Economic Viability of the Northern Shrimp Fishery, 1983, K. Voutier, January, 1984.

10. Costs and Earnings of Selected Inshore and Nearshore Fishing Enterprises in the Newfoundland Region - 1982, Economics Branch, March, 1984.

11. Economic Indicators of Inshore and Nearshore Fishing Enterprises 1979-1982, Economics Branch, March, 1984.

12. The Processing Sector North of 50° Latitude: A Financial Profile, J.E. Davis and W.M. Follett, July, 1984 (INTERNAL-CONFIDENTIAL)

PUBLICATIONS LISTING

13. An Economic Assessment of the Middle Distance Longline Pilot Project Using the Norwegian Longliner MV KELTIC, M.C. Grandy, July, 1984

14. Costs and Earnings of Selected Inshore and Nearshore Fishing Enterprises in the Newfoundland Region - 1983, Economics Branch, September, 1984.

15. The Socio-Economic Importance of the Commercial Salmon Fishery in Newfoundland and Labrador, A Report Prepared for the 1984 Atlantic Salmon Task Group by Economics Branch, Department of Fisheries & Oceans, Nfld. Region, October, 1984.

16. Benefit/Cost Analysis - Direct Sales Program - Newfoundland Region, 1984, Brian Donahue, November, 1984

17. An Economic Assessment of the 1982 St. Pierre Bank Scallop Fishery, M.C. Grandy, December, 1984.

18. An Economic Assessment of the Purse Seine Fishery in the Newfoundland Region, M.C. Grandy, December, 1984.

19. Economic Indicators of Inshore and Nearshore Fishing Enterprises in the Newfoundland Region 1979-1983, Economics Branch, December, 1984

1985

20. An Economic Assessment of Inshore and Nearshore Groundfish Enterprises in NAFO Divisions 3K, 3L and 3Ps - 1981-83, Kenneth A. Carew and Keltie C. Voutier, September, 1985.

21. Costs and Earnings of Selected Inshore and Nearshore Fishing Enterprises in the Newfoundland Region - 1984, Economics Branch, September, 1985.

22. The Economic Impact of the Newfoundland and Labrador Commercial Salmon Fishery: An Intra-Regional Study of Dependence - 1983, M.C. Grandy, September, 1985.